THE AMERICAN
Nature Study
SOCIETY

WINTER NEWS LETTER ☆ NOVEMBER, 1954

Liberty Hyde Bailey

Courtesy Cornell Alumni News

LIBERTY HYDE BAILEY

Liberty Hyde Bailey, first president of the American Nature Study Society, died at his home in Ithaca, N. Y., December 25, 1954 — within two months of his 97th birthday.

In 1903, five years before the American Nature Study Society was founded, Bailey published "The Nature Study Idea." During the fifty-two years which have followed the publication of this book we have moved toward the goals he set for us. As I review the years which have passed, I am amazed at the foresight of a statement he made in 1903, "Nature-study will endure, because it is natural and of universal application. Methods will change and will fall into disrepute; its name will be dropped from courses of study; here and there it will be incased in the school master's 'method' and its life will be smothered; now and then it will be over-exploited; with some persons it will be a fad: but the spirit will live."

Many members of the American Nature Study Society had the rare opportunity for personal contact with Liberty Hyde Bailey. As I think of him many happy associations come to my mind: sitting by his fireside in 1934 as he gave alert responses to questions from E. Laurence and a group of students; a personally guided tour through his hortorium, the high point of this being a grape specimen sheet sent from the Georgia Experiment Station — my home state; imaginary collecting trips with him to Cuba, to Africa, to South and Central America; pouring over his "Encyclopedia of Horticulture" for the derivation of scientific names; hearing him review the history of the American Nature Study Society at one of the annual meetings; getting, first-hand, the background of my favorite book inscription (found in "The Nature Study Idea"):

"To

MRS. JULIA FIELD-KING

A TEACHER WHO ALLOWED A BOY TO GROW

I inscribe this book"

As we near the half-century mark as a Society, it might be well for us to "take stock" of our philosophy by a "yardstick" set up at the beginning of the present century by our first president.

The quotations I am using are from "The Nature Study Idea" published in 1903 and "The Outlook to Nature" published in 1905.

For organizational purposes I am grouping the material under three topics: *The Nature Study Idea, The Commonplace,* and *Educational Philosophy.*

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Berkeley Meeting of ANSS

BY STANLEY MULIAK

The American Nature Study Society held its 47th annual meeting on the campus of the University of California at Berkeley from December 27 to 31 with a full and varied program which attracted a large audience. The first morning program consisted of reports relating to Natural History as revealed by early explorers in the West. Frances Newsom stressed the contributions to the literature of natural history by early western explorers. Pioneer botanists of the Pacific Northwest was the subject of a paper by Erwin F. Lange while Kenneth Gordon discussed the Tracks of Early Western Explorers in Taxonomy. Richard G. Miller reviewed the early explorers and the Natural History of Nevada which had its parallel in a report by Roland C. Ross on the Early Explorations in the natural History of California.

The afternoon program centered on the Recent Scientific Explorations in the west and their contribution to the Natural History. The records which trees leave on the western landscape in relation to activity and dating of glaciers, land slides and volcanism was ably presented by Donald B. Lawrence. Arthur E. Harrison reported on his measurements of glaciers in the west pointing out that while some glaciers are receding, others appear to be growing. James Kezar had made an extensive study of Crater Lake National Park and reported his findings. The Use of Tillamook Burn as a Laboratory for Ecology by James A. Macnab presented ideas useful in other areas for an interpretive program. An outstanding paper which received two columns in a San Francisco paper was by two teen-agers, Douglas Burns and Raymond Harris, who reported on a Teen-age Natural History Expedition into the John Day Region of Oregon. They demonstrated that when youth is given a bit of guidance and free rein, they can do

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THANKS

are in order to:

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who were most patient with an editor who seldom got the NEWS LETTER out on time.

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who have sent in copy for the NEWS LETTER.

The Park Press . . .
for perfect cooperation; by speeding up their work, they did much to compensate for the late date at which they received the copy.

Those who made suggestions and gave words of encouragement . . .
Cap'n Bill Vinal, Roger Peterson, Ed Teale, and Dick Westwood

The Officers . . .
who have been most cooperative and understanding.

I have a feeling the editor-ship affords good training for the presidency. I hope this proves true in my case. In spite of all the difficulties involved — a heavy teaching schedule on campus, off campus classes, frequent garden club talks, and the tendency of ANSS members *not to send in news of their activities* — this has been a most worthwhile experience for me.

My congratulations to the Society in the selection of Stanley Muliak as the new editor. Stanley and Dorothea make a fine team. They will produce a NEWS LETTER of high quality. Send news of your activities to:

Stanley Muliak, Biology Division,
University of Utah,
Salt Lake City 1, Utah

Berkeley Meeting of ANSS

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work which compares well with that of oldsters.

On the evening of the first day the annual business meeting of the ANSS was held. The annual showing of Kodachromes produced pictures of an excellence which only artists with the camera are capable of.

To most people who attended the ANSS convention, the highlights were the field trip to Muir Woods and the annual Nature Study Society banquet. On the field trip, fellowship was spread on thick and old acquaintances were pleasantly renewed and many new ones made. Two bus loads carried such "notables" as Walter P. Taylor, Clarence P. Cottam, Roland Ross, all the past presidents of the Western Division of the ANSS, Leo Hadsall, Ruth Hopson, Harold Bryant, Stanley Mulaik, Richard Miller and Kenneth Gordon incumbent.

The heavy "California dew" dripped from the pines and limited vision to a short distance. However, spirits were not dampened. The luncheon at the Alpine Club Lodge and the ferry boat trip across the bay on the way back to Berkeley were most pleasant experiences, heightened by the sight of another bird for the record, or a new tree or shrub.

A large group assembled for the annual banquet which was held on Wednesday evening at the Brazilian Lodge in the hills above Berkeley. Arthur Nelson, chairman of local arrangements, took the responsibility of having a table spread to quench the appetites of the membership. He did an excellent job. Following the meal, the usual introductions were made by vice-president Richard Weaver, and again all past presidents of the Western Division of the ANSS were present. In addition, Charles Mohr, a past president of ANSS, was present, as well as Ruth Hopson, the retiring president, and Malvina Trussell, the president for 1955.

A talk and a movie by Ruth Hopson followed. The film of nature scenes and activities was titled Natural History at Lava Beds National Monument, Northern California. Many knew that Dr. Hopson was a good photographer, but she outdid her record with this fine collection. The social hour which followed brought renewed friendships and a deepening of old ones, an excellent note for the beginning of 1955 and the 48th year of the American Nature Study Society.

The officers announced for 1955 were Malvina Trussell, president; Richard Weaver, vice-president; Helen Ross, secretary; Gilbert Mouser, treasurer; and Stanley Muliak, editor of NEWS LETTER. Members elected for two years to the board of directors were H. Seymour Fowler, Ruth Hopson, James Fowler, Raymond Gregg, Rex Conyers, and John Wanamaker.

Financial Statement

AMERICAN NATURE STUDY SOCIETY
1954

DEBITS	
Bank Balance as of January 1, 1954	$ 721.82
Dues and Subscriptions	1,341.00
Total Debits	$2,062.82
CREDITS	
Printing and Stationery	$ 388.78
Periodicals	928.50
Clerical Assistance	30.00
Postage	106.31
Meeting Expenses	37.82
Bank Service Charges	3.88
Insufficient Funds	19.00
Total Credits	$1,514.29
Bank Bal. as of Jan. 1, 1955	$ 548.53

Back Issues of News Letter Available

The following issues of the ANSS NEWS LETTER are available to members: August, 1949, 1950, 1951; February, 1950, 1951; May, 1950, 1951, 1952; October, 1950, 1951; June, 1953; September, 1953; November, 1953.

These issues will be forwarded to our new editor on April 1. If you wish copies, send your name and address to:

Malvina Trussell,
2011 Lee Avenue,
Tallahassee, Florida

LIBERTY HYDE BAILEY

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The Nature Study Idea

Nature may be studied with either of two objects: to discover new truth for the purpose of increasing the sum of human knowledge; or to put the pupil in a sympathetic attitude toward nature for the purpose of increasing his joy of living. The first object, whether pursued in a technical or elementary way, is a science-teaching movement, and its professed purpose is to make investigators and specialists. The second object is a nature-study movement, and its purpose is to enable every person to live a richer life, whatever his business or profession may be.

Nature-study, then, is not science. It is not knowledge. It is not facts. It is spirit. It is an attitude of mind. It concerns itself with the child's outlook on the world.

I have a growing feeling that the nature-study method is not only a public-school process, but that it is equally needed in colleges and universities for all unspecialized students.

* * *

Much of the beginning teaching in the sciences in colleges and universities is undoubtedly very bad. It is no doubt accurate, and it may also be adapted to a few students who desire to specialize in the subject; but such students should be taken further in courses designed for them. Condensed general courses that give the college student a rational view of the subject, without many details and exceptions, are very much to be desired; and such courses should attempt to relate the student to his own experience in life.

* * *

There are very many teachers and very many schools, and very many pupils, who have a new outlook on life as the result of nature-study work, but if I could give a statistical measure of the nature-study movement, I should consider the work to have been a failure, however large the figures might be.

* * *

The nature-study method is a fundamental and, therefore, a general educational process; the formal science-teaching method is adapted to mature persons and to those who would know a particular science.

* * *

There are two or three fundamental misconceptions of what nature-study is or should be; and to these we may now give attention.

It is not the teaching of science — not the systematic pursuit of a logical body of principles. Its intention is to broaden the child's horizon, not primarily to teach him how to widen the boundaries of human knowledge. It is not the teaching of botany or entomology or geology, but of plants, insects and fields . . . fundamentally, nature-study is seeing what one looks at and drawing proper conclusions from what one sees; and thereby the learner comes into personal relation with the object.

It is not reading from nature-books. Nature-study is studying things and the reason of things, not about things. A child was asked if she had ever seen the great dipper. 'Oh, yes,' she replied, 'I saw it in my geography.'

This is better than not to have seen it at all; but the proper place to have seen it is in the heavens. Nature-readers may be of the greatest value if they are made incidental and secondary features of the instruction; but, however good they may be, their influence is pernicious if they are made to be primary agents. Nature-study begins with the concrete, as the child does if left to itself. The child should first see the thing. It should then reason about it. Having a concrete impression, it may then go to the book to widen its knowledge and sympathies. Having seen mimicry in the eggs of the aphis on the willow or apple twig, or in the walking-stick, the pupil may then take an excursion with Wallace or Bates to the tropics and there see the striking mimicries of the leaf-like insects. Having seen the wearing away of the boulder or the ledge, he may go to Switzerland with Lubbock and see the mighty erosion of the Alps. Now and then the order may be reversed with profit, but this should be the exception: from the wagon to the star should be the rule.

* * *

Nature-study is not the teaching of facts merely for the sake of the facts, or materials for the sake of the materials; its purpose is to develop certain intellectual powers by the use of the materials. It is not the giving of information only — notwithstanding the fact that some nature-study leaflets are information leaflets. We must begin with the fact, to be sure, but the lesson lies in the significance of the fact. It is not necessary that the fact have direct practical application to the daily life, for the purpose is the effort to train the mind and the sympathies and to develop in the child a correct view of nature.

* * *

We have been taught that one must make collections if he is to be a naturalist; but collections alone make museums, not naturalists.

* * *

I should prefer ten minutes a day of nature-study to two hours; but I should want it quick, sharp, vivid and spontaneous. I should want it designed to develop the observing and reasoning powers of the child and not to gorge the pupil. Spirit counts for more than knowledge.

* * *

Let the child draw the twigs; but always be careful that the drawing does not become more important than the twigs.

* * *

However competent a person may be in biology or other sciences, he cannot teach nature-study unless he has a wholesome personal outlook on the world.

* * *

There was a time when animals were known mostly in museums, or in books that suggested museums. We now know them in woods and fields where they live. We know what they do as well as what they are. Making pictures from stuffed specimens will soon be a thing of the past. Read any book of natural history of fifty years ago; then read one of today. Note the road by which we have come: this may color your own attitude toward the nature-world.

A new literature has been born. It is written from the out-of-doors viewpoint, rather than from the study viewpoint . . . Not so very long ago animal stories were told for the purpose

of carrying a moral — they were self-conscious. Now they are told because they are worth telling. The real moral is the interest in the animal and the way in which it contrives to live, not in some literary custom that tries to make an application to human conduct.

* * *

I protest against that teaching of nature which runs into thin sentimentalism, which makes the 'goody-goody' part of the work so prominent that it becomes the child's point of view, whether the writing is in prose or verse.

* * *

Nature-study teaching is not specialized teaching. It is a fundamental educational process which should put the child right toward the world and toward life. If every child should have a close connection with his environment, so also, should every grown-up; and it follows that if the grown-up is a teacher, he will carry this spirit into the schoolroom.

I would have only those teachers teach nature-study who are well qualified for it, as I would advise for grammar or other school work. Every teacher ought to have the nature-study outlook to keep him young and interested in life, but we all recognize that relatively few of them have it. Every pupil should have nature-study, under one name or another; but he should receive his inspiration from the teacher who himself is so full of the subject that he teaches with spirit and with cheerfulness.

After a time, we shall not need to argue for nature-study. Teaching must in the end be natural.

* * *

Perhaps our greatest specific need is a wholesome return to nature in our moments of leisure . . . all the more important now that the moments of leisure are so few.

* * *

The repose of the nature-lover and the assiduous exertion of the man of affairs are complementary, not antithetical, states of mind.

* * *

The recourse to nature affords the very means of acquiring the incentive and energy for constructive work of a high order; it enforces the great truth that, in the affairs of men, continued progress is conditioned upon a generous discontent and diligent unrest.

* * *

The outlook to nature is the outlook to optimism, for nature is our governing condition. Men look upward and outward to nature.

* * *

In every person there is a latent desire to know something of the enclosing world, but it is usually ironed out in the laundering processes of the schools and the misdirections of the home.

* * *

Real nature-study cannot pass away. But the more closely we come into touch with nature the less do we publish the fact abroad. We may hear less about it, but it will be because we are living nearer to it and have ceased to feel the necessity of advertising it.

Teaching may not be nature-study merely because it is so called. A superintendent told me that he had forbidden nature-study in his schools. I asked him what the work had been. He said that it was the dissecting of cats. A publisher told me that nature-study books were not selling as well as they did. I told him that I was glad.

Much that is called nature-study is only diluted and sugar-coated science. This will pass. Some of it is mere sentimentalism. This also will pass. With the changes, the term nature-study may fall into disuse; but the name matters little so long as we hold to the essence.

* * *

The seeking of truth in fresh fields and for the love of it, is akin to the enthusiasm of youth. Men keep young by knowing nature. They also keep close to the essentials. One of the New Sayings of Jesus is this: 'Raise the stone, and there thou shalt find me; cleave the wood, and there am I.'

* * *

The Commonplace

By nature, I mean the natural out-of-doors . . . Every person desires these things in greater or lesser degree . . . Yet there are comparatively very few persons who have any intimate contact with nature, or any concrete enjoyment from it, because they lack the information that enables them to understand the objects and phenomena.

If I cannot catch a note of inspiration from the plainest thing that I touch, then to that extent my life is empty and devoid of outlook.

The reach for something new has become so much a part of our lives that we cease to recognize the fact, and accept novelty as a matter of course.

* * *

Day by day we complain and fret at the weather, and when we are done with it we have — the weather. The same amount of energy put into wholesome work would have set civilization far in advance of its present state. Weather is not a human institution, and therefore it cannot be 'bad.' I have seen bad men, have read bad books, have made bad lectures . . . but I have never seen bad weather!

'Bad weather' is mainly the fear of spoiling one's clothes. Fancy clothing is one of the greatest obstacles to a knowledge of nature.

Civilization has led us away from the morning, and at the same time it has led us away from youthfulness. We have telescoped the day far into the night, and morning is becoming obsolete. I know that this cannot be helped; but it can be mentioned.

I have asked person after person whether he ever saw the sun rise. The large number have said no; and most of those who had seen the sun rise had seen it against their will and remembered it with a sense of weariness.

* * *

A sympathetic knowledge of nature will in the end be more satisfying than much of the amusement that the town has to offer.

But even in the midst of all our eagerness and involvedness, it is still possible to open the mind toward nature, and it will sweeten and strengthen our lives. Nature is our environment, and we cannot escape it if we would. The problem of our life is not yonder; it is here.

Educational Philosophy

I do not consider myself competent to answer any questions on abstract theories of pedagogy. I did not come to my present work through that route. My educational outlook has developed personally and is founded essentially on the needs of the child, as I have been able to estimate those needs, without reference to pedagogical theory. I have heard discussions of the culture-epoch theory and other hypotheses of the psychology of education, but I am always obliged to come back to the simple fact that the child lives in a real environment and that this environment should be known to him and appreciated by him. I do not depreciate the value of the psychological theories, but I am not able properly to place the nature-study work with reference to them.

* * *

In my first work and writing on nature-study, I think that I was wholly unconscious of any conflict of my views with the current theories of educational procedure; in fact, the pedagogical theories were unknown to me till they were called to my attention. I had merely set forth my convictions, resulting from many years of teaching, to the effect that the best way to teach nature subjects is to begin with a good simple observation rather than with dissection, classification, experiment or memorizing. I think that the same process should be followed in the training of the teacher himself.

The recent years have been a time of widespread discussion of all phases of education for the people, and the nature- study idea has received its full share of attention. Whatever may be the opinion of individual teachers and writers on the nature-study movement, it is a fact that our educational methods are reshaping themselves in such a way as to allow the pupil to develop a sympathetic and vital contact with his usual environment; and the stiff, dead and painfully exact teaching of rule and fact to the young is rapidly giving way to a free, spirited and natural way of teaching. We can even now begin to see the result in a less restrained and more wholesome outlook on life in the young generation. It will be much satisfaction to me if I can feel at the end that this fragmentary book has had some effect in heartening teachers not to be afraid to teach.

* * *

A botanist told me that I was doing superficial work. Judged from the viewpoint of research, perhaps he was right; but I was not teaching science. Judged from the viewpoint of the child, I hope he was wrong. One is not superficial merely because he does not strike deep into subject matter. He should try to be accurate as far as he goes. What is superficiality in the specialist may be commendable thoroughness in the layman. Even the specialist is satisfied with the most superficial knowledge in subjects outside his speciality. His knowledge of men and of business, for example, is likely to be superficial.

This charge of superficiality is usually only the opinion of a different point of view. This is well illustrated in the critical reviews of elementary text-books of science. Books that have been criticized severely by the scientist have been acceptd with enthusiasm by the schoolmaster. The primary merit of a school-book lies in its pedagogy rather than in its science. Statements in such books have two values — the teaching value and the science value. Too often the reviewer thinks only of the science value.

Of course there is danger of superficiality. There is this danger in everything; but the danger is inherent in the person, not in the subject. Solid work is as necessary in nature-study as in everything else. It is not play, it is not sentimentality, and it is not blind wonder.

* * *

The pupils in a certain school were asked whether they could define or distinguish an educated man. After a long pause, one little girl raised her hand and said that she surely could tell. 'An educated man,' the child said, 'is one that does not work.'

This homely reply admirably illustrates a popular conception of education . . . that it does not put one into direct relation with the affairs of life, as if education and occupation are incompatible.

Most of us will not accept the child's opinion; yet there seems to be a deep-rooted feeling that a person cannot be really educated by means of subjects that have a direct application to the common necessities of living. It is an old idea that education makes a man accomplished. It is the new idea that it also makes him useful; and as all spiritual progress is inseparably associated with physical welfare, this new education stands for the completer and the larger man.

* * *

I have always liked the story of the Adirondack guide, who thought Agassiz an educated man and Lowell an ignorant man, for it is a forcible expression of the fact that there is more than one kind of education — Agassiz knew the things that appealed to the guide.

* * *

Much of what passes as culture is very superficial attainment and may be little more than good manners. But breadth of view, clear reasoning power, good judgment, tolerance, high ideals, sensitiveness to art and nature, devotion to service — these are of the greatest value, and they may be the result of more than one line of educational effort. The old-time formal and literary attitude, with facility in a particular group of academic subjects, is much to be prized; but sensitiveness to life is the highest product of education.

* * *

Education should have a tendency toward something definite; for the educated man, if he is to help to lead the world, must not stand above and aloof from mankind. When only Greek-minded men went to college, it was enough that Greek was taught; but now that physics-minded and physiology-minded and farm-minded men go to college, engineering and physiology and agriculture also should be taught. I do not suppose that there is any way whereby an examination of the fiber of an educated man's brain could reveal the means by which the mind was trained.

It is a favorite assertion that some education is 'liberal'! So far as this word is merely a name to designate a certain group of subjects, no one can object; but if it is the inference that other subjects are illiberal, then the statement cannot go unchallenged. The fact is that the older type of education is likely not to have a liberalizing effect, because it not only confines a man's attention to certain efforts that may be narrow in themselves but often renders him unsympathetic toward those who have not pursued a similar course, and also toward affairs in general. I once heard the president of an excellent literary college say that his institution 'educates men, not farmers and blacksmiths.' Most persons now think that a college may educate farmers and blacksmiths to be men.

No boy or girl should leave school without the power to attack a question in actual affairs or to do a piece of work with

the hands. I do not consider a person lacking these powers to be well educated, even though he knows all the books.

* * *

No doubt education should be supremely natural, and it can be natural only when it makes use of the forces and objects in the neighborhood.

* * *

The general elementary schools cannot teach trades, occupations or professions; but they can use the materials of trades and occupations as one of the aids to scholarship, and while doing so they may give such a 'set' toward the occupations as will attract all youth and will at the same time make them more efficient in their own behalf and also in behalf of civilization.

Such work, if well done, would vitalize the school and lift it clean out of the ruts of tradition and custom. It would make a wholly new enterprise of the school, rendering it as broad and significant as the community itself, not an exotic effort for some reason dropped down in the neighborhood . . . an education that uses native objects and affairs as means of training in scholarship, setting the youth right toward life, making him to feel that schooling is as natural as any other part of his life, that he cannot afford to neglect it any more than he can neglect the learning of a business or occupatin, that the home and school and daily work are only different phases of his normal life, and that common duties may be made worthy of his ideals. It is the active as distinguished from the sit-still method.

Nature-study should not be unrelated to the child's life and circumstances . . . It is astonishing, when one comes to think of it, how indirect and how removed from the lives of pupils much of our education has been . . . There are many exceptions, and these are becoming commoner. Surely, the best education is that which begins with the materials at hand. A child knows a stone before it knows the earth.

The tendency is to go too far afield for the subject-matter. We are more likely to know the wonders of China or Brazil than of our own brooks and woods. If the subject-matter is of such kind that the children can see the objects as they come and go from the school, and collect some of them, the results will be the better. As the pupil matures, he should be taken out to the world activities.

It is not necessary that the teacher always know the reason. He may propose that they all find out and report. It is the strong teacher who can say: 'I do not know.' If a problem had been sent to Agassiz or Asa Gray and he had not understood it, would he have dissimulated or have evaded in the answer? Would he not have said unhesitatingly, 'I do not know'? Such men delve for knowledge, but for every fact that they discover they turn up a dozen mysteries. Knowledge begins in wonder. The consciousness of ignorance is the first result of wonder, and it leads the pupil on: it is the spirit of inquiry.

To be able to distinguish the notes of the different birds is one of the choicest resources in life, and it should be one of the first results of a good education. It is but a step from this to the other small voices — of the insects, the frogs and toads, the mice, the domestic animals, the flow of quiet waters, and the noises of the little winds. It is a great thing when one learns how to listen.

* * *

All the senses should be so trained and adjusted that all our world becomes alive to us. Then we are really sensitive.

* * *

A person may be so intent on mere literal veracity that he misses the pupil . . . They are so cognizant of exceptions to every rule that they qualify their statements until the statements have no spirit and no force. There are other ideals than those of dead accuracy. It is more important that any teacher be a good teacher than a good scientist. But being a good scientist ought not to spoil a good teacher.

* * *

I like the man who has had an incomplete course. A partial view, if truthful, is worth more than a complete course, if lifeless. If the man has acquired power for work, a capability for initiative and investigation, an enthusiasm for the daily life, his incompleteness is his strength. How much there is before him! How eager his eye! How enthusiastic his temper! He is a man with a point of view. This man will see first the large and significant events; he will grasp relationships; he will correlate; later, he will consider the details. He will study the plant before he studies the leaf or germination or the cell. He will discover the bobolink before he looks for its toes. He will care little for mere 'methods.' His teaching will have freshness.

* * *

Science-teaching has more to fear from desiccated science-teaching than it has from nature-study.

* * *

If you love nature and have living and accurate knowledge of some small part of it, teach! Do not fear your scientific reputation if you feel the the call to teach. Your reputation is not to be made as a geologist or zoologist or botanist, but as a leader. When beginning to teach birds, think more of the pupil than of ornithology. The pupil's mind and sympathies are to be expanded: the science of ornithology is not to be extended; the science will take care of itself. Remember that spirit is more important than information.

The more perfect the machinery of our lives, the more artificial do they become. Teaching is ever more methodical and complex. The pupil is impressed with the vastness of knowledge and the importance of research. This is well; but at some point in the school-life there should be the opening of the understanding to the simple wisdom of the fields. One's happiness depends less on what he knows than on what he feels.

* * *

More and more, in this time of books and reviews, do we need to take care that we think our own thoughts. We need to read less and to think more. We need personal, original contact with objects and events. We need to be self-poised and self-reliant. The strong man entertains himself with his own thoughts. No person should rely solely on another person for his happiness.

* * *

The power that moves the world is the power of the teacher.

* * *

A demure little woman at the teacher's convention told of the enthusiasm with which her pupils had collected butterflies and plants, and she described the museum that they had made. She showed a folio of mounted plants, and a cigar-box containing insects. I admired the specimens, and mentally complimented her judgment in finding so good use for such a box. The tobacco odor kept the carnivorous bugs away, and I also commended the judgment of the bugs. There was a genuine enthusiasm in the little woman's manner, and I wanted to be a

young naturalist. When she was talking, I strayed far in the fields and picked a dandelion.

But there was a man in the audience who squelched the little woman. Her methods were all wrong. They were worse than wrong: the children must unlearn what she had taught them. She should have begun with some definite subject, and followed it systematically and logically. The pupil must be held to the task day after day, until he masters the topic. To skip from subject to subject is to be superficial. This way of teaching does not result in mental drill . . . The pupil must be impressed with the completeness of his subject, and, above all things, he must be accurate. When he was talking, I smelled alcohol and I saw a frog in a museum jar.

Which was right? No doubt each was correct from the personal point of view, but wrong from the other's point of view . . . The little woman was teaching children . . . She approached the subject from the human side, for are not the boy and the girl a part of what we call nature? They are not yet tamed and conventionalized . . . She was not thinking of the subject-matter; or if she did think of it, she knew it could take care of itself. All she was thinking of — poor soul! — was to interest and educate the children. And she knew that if she set a subject and followed it unremittingly day by day the seats would soon be vacant.

The man was thinking of his college students; perhaps he had not considered that these students already liked the subject and needed only instruction. He forgot that you cannot force a person to choose a thing, although you may force him to take it. His were picked students, one from this town and another from that; hers were all the pupils in her little community. His pupils had seen and had chosen; to hers the world was all unseen and untried. His were the one in a hundred; hers were the entire hundred. His students had elected the subject; for this subject perhaps they were to live; they would increase the boundaries of knowledge; they would be scientists. He did not consider that all pupils would not be scientists.

* * *

The botanist may well devote his life to a cell, but the layman wants to know the trees and the woods.

We hope that we are coming nearer to an intrinsic view of animals and plants; yet we are still so intent on discovering what ought to be, that we forget to accept what is.

Nothing is easier than to find an explanation for anything; the only difficulty is to determine whether the explanation is true.

Every pupil had a plant of the spring buttercup. The teacher called attention to the long fiibrous roots, the parted leaves, the yellow flowers; but these parts were apparently only incidentals, for she touched them lightly. But the hairs on the stem and leaves were important. They must be of some use to the plant. What is it? Evidently to protect the plant from cold, for does not the plant throw up its tiny stem in the very teeth of winter?

I wondered how these children would look on the plants and animals they meet, and what the great round world would mean to them . . .

I wondered what would happen if some inquisitive child were to ask what becomes of all the plants that have no thorns or hairs or poison or ill scent. What if he should ask why the thornless blackberry does not perish, or why the sumacs that are not poisonous still live, or if he should suggest that the dandelion comes up earlier in the spring than the buttercup and yet has no hairs on its soft flower-stem? As I wondered, a little hand went up. The teacher granted a question. 'Pigweeds ain't got prickers,' said the boy. I saw that the boy was a philosopher. 'True enough,' replied the teacher promptly, 'but I am sure that it has something with which to protect itself.'

Thereby I knew her point of view: she had made up her mind what to see, and it was necessary only to hunt until she saw it; and in this respect she was like many another.

No one knows what spines and thorns are 'for,' and the true naturalist does not ask the question. He does not assume that because they would protect a man they would also protect another animal or plant. He wants to know how they came to be, and what is their significance in the development of this particular race. He wants proof that adaptations are adaptation. He sets to work to find out. He cannot find out as he rides by on his horse — especially if he rides a hobby-horse.

* * *

Fill yourself full of some subject, however small it may be. When you cannot hold it longer, teach. Yes, you may make mistakes. But every one makes mistakes, even with the best of pains. Every person who, by teaching or writing, has helped the world to a higher plane, has said or written errors. Every person, and particularly every teacher, should make all effort to be accurate; but if we wait till every possibility of error is removed, the world's work will never be done. Many a man sacrifices his chances of usefulness for fear of making a mistake. The real work of the world is not performed by timid persons.

* * *

It is not necessary that you become a scientist in order to teach nature study. You simply go as far as you know, and then say to the pupil that you cannot answer the questions which you cannot. This at once elevates you in the pupil's estimation, for the pupil is convinced of your truthfulness, and is made to feel — but how seldom is the sensation! — that knowledge is not the peculiar property of one person but is the right of any one who seeks it. It ought to set the pupil inquiring for himself. The teacher never needs to apologize for nature. He is teaching only because he is an older and more experienced pupil than the pupil is. This is the spirit of the teacher in the colleges and universities today. The best teacher is the one whose pupils the furthest outrun him; his pride is in the good pupils that he sends out.

* * *

The saitsfaction that we derive from the external world is determined by the attitude in which we consider it. All unconsciously one's habit of mind toward the nature-world is formed. We grow into our opinions and habits of thought without knowing why. It is therefore well to challenge these opinions now and then, to see that they contain the minimum of error and misdirection. The greatest thing in life is the point of view. It determines the current of our lives.

* * *

What may be the results of nature-study? Its legitimate result is education — the developing of mental power, the opening of the eyes and the mind, the civilizing of the individual. As with all education, its central purpose is to make the individual happy; for happiness is nothing more nor less than pleasant and efficient thinking, coming from a consciousness of the mastery, or at least the understanding, of the conditions in which we live.

continued on page 8

Liberty Hyde Bailey

continued from page 7

In reply to your letter, asking how I would advise the teaching of 'humane education' in the schools, I will say that I should let such teaching come as a result of a natural and well-directed development of the child. I should not teach tenderness, sympathy and morality directly as abstractions. I should try to interest the child in all living things, including other human beings, leading him to see their lives as they live them and enabling him to understand them. He then would have reason for caring for them, and instruction would not be mere preaching.

The child should first come in contact with things rather than with ideas about things. This is the natural order.

* * *

Too early in the school life do we begin to make pupils mere artists and literators. First the child should be encouraged to express himself; then he may be taught to draw and to compose.

* * *

Primarily, drawing is a means of expressing what we see and feel; now and then a person develops the ability to make a picture that pleases others, and he becomes an artist. Primarily, our interest in the external world is one of sympathy and personality; now and then a person develops the ability to make discoveries and to record them, and he becomes a scientist.

* * *

Drawing should be encouraged primarily for the purpose of discovering what the child really sees. As the child sees more, and with greater accuracy, the drawings improve. So the drawings become an approximate measure of the progress of the pupil. Do not measure the drawings merely as drawings, or from the artist's point of view. We are likely to dwell so much on the mere product of the child's work that we forget the child.

* * *

Nature is not consecutive except in her periods. She puts things together in a mosaic. She has a brook and plants and toads and insects and the weather all together. Because we have put the plants in one book, the brooks in another, and the bugs in another, we have come to think that this divorce is the logical and necessary order.

* * *

Persons lose standing by pretending to know what they do not know and being caught at it. The child is relieved to know that there is something yet to be discovered.

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If you know of corrections which should be made in the above list, please write our new editor.

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